AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listing of claims in the above-referenced application.

1. (Currently Amended) A [[computer implemented]] method for tracking entities in an LC/MS system, comprising:

choosing a subset of entities from a first injection;

choosing a subset of entities from a second injection;

comparing, using a computer, the entities chosen from the first injection to those chosen from the second injection;

identifying, using a computer, entities chosen from the first injection that match entities chosen from the second injection;

constructing, using a computer, a retention time map based on the matching entities of the subsets, said constructing including determining a filtered retention time drift for each pair of matching entities including a first entity from the first injection and a second matching entity from the second injection;

assigning, based on the retention time map, reference retention times to all entities in the first injection and the second injection, wherein reference retention times are assigned to entities in the second injection using the filtered retention time drifts determined in said constructing ~~a portion of entities, said portion including the subsets and entities of the first injection and the second injection other than those in said subsets~~; and

tracking entities through the first and second injections using the reference retention times and mass values.

2. (Canceled)

3. (Original) The method recited in claim 1, comprising sorting the matched entities.

4. (Previously Presented) The method recited in claim 1, further comprising:

determining whether an entity has a corresponding entry in the retention time map;

using a defined value of retention time if the entity has a corresponding entry in a look-up table;

using an interpolated value of retention time if the entity does not have a corresponding entry in the look-up table.

5-9. (Canceled)

10. (Currently Amended) A system for tracking entities in an LC/MS system, the system comprising a computer programmed to perform processing, said processing comprising:

choosing a subset of entities from a first injection;

choosing a subset of entities from a second injection;

comparing the entities chosen from the first injection to those chosen from the second injection;

identifying entities chosen from the first injection that match entities chosen from the second injection;

constructing a retention time map based on the matching entities of the subsets, said constructing including determining a filtered retention time drift for each pair of matching entities including a first entity from the first injection and a second entity from the second injection;

assigning, based on the retention time map, reference retention times to all entities in the first injection and the second injection, wherein reference retention times are assigned to entities in the second injection using the filtered retention time drifts determined in said constructing ~~a portion of entities, said portion including the subsets and entities of the first injection and the second injection other than those in said subsets~~; and

tracking entities through the first and second injections using the retention time map and mass values.

11. (Canceled)

12. (Previously Presented) The system recited in claim 10, said processing further comprising:

sorting the matched entities.

13. (Previously Presented) The system recited in claim 10, said processing further comprising:

determining whether an entity has a corresponding entry in the retention time map;

using a defined value of retention time if the entity has a corresponding entry in a look-up table;

using an interpolated value of retention time if the entity does not have a corresponding entry in the look-up table.

14-18. (Canceled)

19. (Currently Amended) A system for tracking entities in an LC/MS system, comprising:

a liquid chromatograph into which the sample is injected to separate entities in the sample, and to determine a retention time associated with each of the one or more entities;

a mass spectrometer into which the entities are input to determine a mass of each of the one or more entities; and

a computer programmed for:

choosing, based on intensity, a subset of entities from a first injection and a subset of entities from a second injection;

comparing the entities chosen from the first and second injections;

identifying matching entities in the first and second injections;

constructing a retention time map based on the matching entities, said constructing including determining a filtered retention time drift for each pair of matching entities including a first entity from the first injection and a second entity from the second injection;

assigning reference retention times to all entities in the first injection and the second injection based on the retention time map, wherein reference retention times are assigned to entities in the second injection using the filtered retention time drifts determined in said constructing; and

tracking the entities using the retention time map and mass values.

20. (Canceled)

21. (Original) The system recited in claim 19, wherein the computer is further programmed to sort the matching entities.

22. (Previously Presented) The system recited in claim 19, wherein the computer is further programmed for:

determining whether an entity has a corresponding entry in the retention time map;

using a defined value of retention time if the entity has a corresponding entry in a look-up table; and

using an interpolated value of retention time if the entity does not have a corresponding entry in the look-up table.

23-27. (Canceled)

28. (New) The method of Claim 1, wherein the first injection is a reference injection and a reference retention time assigned to each entity in the first injection is said each entity's retention time from the first injection.

29. (New) The method of Claim 1, wherein the subset of entities chosen from the first injection have intensities higher than a predetermined threshold.

30. (New) The method of Claim 1, wherein the subset of entities chosen from the second injection have intensities higher than a predetermined threshold.

31. (New) The method of Claim 1, wherein each pair of matching entities satisfies intensity ratio matching requirements such that the intensity ratio of the first entity with respect to the second matching entity is more than a first value and also less than a second value.